Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
E04002PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2004/007709	03.06.2004	05.06.2003

International Patent Classification (IPC) or national classification and IPC

Applicant

OKUTAMA KOGYO CO., LTD.

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 3 sheets, as follows:

      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/007709

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (Rule 12.3 and 23.1(b))

☐ publication of the international application (Rule 12.4)

☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1,3,5-8 as originally filed/furnished

pages* 2,4 received by this Authority on 14.01.2005

pages* _____ received by this Authority on _____

☒ the claims:

nos. 2-7 as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* 1 received by this Authority on 14.01.2005

nos.* _____ received by this Authority on _____

☐ the drawings:

sheets _____ as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/007709

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-7	YES
	Claims		NO
Inventive step (IS)	Claims	1-7	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Document 1: JP 54-160597 A (Shiraishi Kogyo Kabushiki Kaisha), 19 December 1979

Document 2: JP 10-59716 A (Kyodo Kumiai Tsukumi Fine Ceramics Kenkyu Center et al.), 03 March 1998

Document 3: JP 9-309723 A (Okutama Kogyo Co., Ltd.), 02 December 1997

Document 4: JP 3-14696 A (Okutama Kogyo Co., Ltd.), 23 January 1991

Document 5: JP 3-197318 A (Okutama Kogyo Co., Ltd.), 28 August 1991

Document 1 makes disclosures in relation to acicular calcium carbide aggregates that have a void volume of 1.8 to 3.3 ml/g and a specific surface area of 8 to 20 m^2/g, which are formed by intertwining acicular primary particles that have a length (L) of 0.5 to 10.0 μm and a width (W) of 0.05 to 0.20 μm in a three-dimensional manner (refer to the claims, examples 1 and 3, and tables 1 and 2). Therein, the abovementioned length, width and void volume can be considered to correspond to the major axis, the minor axis and the pore volume in the invention that is set forth in claim 1, and

the aspect ratio (i.e. the ratio of the major axis / the minor axis) thereof can be said to be 3 or more. However, the invention that is disclosed in document 1 pertains to acicular calcium carbide aggregates, as is indicated above; therefore, document 1 does not disclose or suggest the invention that is set forth in claim 1, wherein fusiform primary particles are aggregated so as to form blocks.

Document 2 discloses spherical calcium carbide complexes that have a pore volume of 0.1 to 3.0 μm, which are formed by aggregating tabular primary particles that have a diameter of 0.2 to 10.0 μm and a thickness of 0.02 to 2.00 μm into a spherical shape (refer to claims 1, 3 and 4). Therein, the abovementioned diameter and thickness can be considered to correspond to the major axis and the minor axis in the invention that is set forth in claim 1. In addition, document 1 presents configurations wherein the secondary particles have a diameter of 10 μm in examples 1 and 3, and presents configurations wherein the specific surface area is 10 m^2/g or 8 m^2/g in examples 3 and 5 (refer to paragraphs [0017], [0029], [0031] and [0033]).

However, the invention that is disclosed in document 2 pertains to spherical complexes that are configured by aggregating tabular calcium carbide particles, as is indicated above; therefore, document 2 does not disclose or suggest the invention that is set forth in claim 1, wherein fusiform primary particles are aggregated so as to form blocks.

Meanwhile, document 3 discloses the feature of employing a slaked lime slurry with a quick lime concentration of 50 to 150 g/l that is obtained by

subjecting quick lime, which has been adjusted so as to have a 4N hydrochloric acid activity (a three minute value) of 150 to 350 ml, to a wet slaking process (refer to claim 1); document 4 discloses the feature of blowing a gas that contains carbon dioxide into a slaked lime slurry that has a slaked lime concentration of 3 to 30 wt% until 85 to 95% of the slaked lime slurry has undergone a carbonization reaction, and thereafter adding more of the slaked lime slurry until the molar ratio of the calcium hydroxide that is present in the reaction solution in relation to the calcium hydroxide that is present in the slaked lime slurry reaches a molar ratio of 10:1 to 1:20 and further blowing in more of the gas that contains carbon dioxide in order to concentrate the reaction (refer to claim 1 and page 3, lower right column, line 8 to page 4, lower right column, line 4); and document 5 discloses the feature of blowing a gas that contains carbon dioxide into a slaked lime slurry that has a slaked lime concentration of 7 to 15 wt% until 70 to 95% of the slaked lime slurry has undergone a carbonization reaction and thereafter continuously adding more of the slaked lime slurry until the molar ratio of the total amount of calcium that is present in the primary reaction solution in relation to the amount of calcium that is present in the slaked lime slurry reaches a molar ratio of 10:1 to 1:20 while also blowing more of the gas that contains carbon dioxide into the slurry so as to maintain a pH level of 12 (refer to the claims). Therefore, documents 3 to 5 can be said to disclose the processes from the invention that is set forth in claim 2 in a fragmentary manner. However, the documents in question cannot be said to suggest the feature of

combining the steps that are set forth in claim 2; likewise, it cannot be said to have been easy to conceive of obtaining the superior calcium carbide that is set forth in claim 1 by combining the steps from the invention that is set forth in claim 2, even with consideration of documents 3 to 5. Furthermore, documents 1 and 2 disclose inventions that employ additives such as an oxycarbonic acid or a condensed phosphoric acid compound; therefore, said inventions employ a different technique from the invention that is set forth in claim 2.

For the reasons that are indicated above, the inventions that are set forth in claims 1 and 2 involve an inventive step. Moreover, the same is true with regards to claims 3 to 7, which cite claims 1 and 2.